Get a Winning Oracle Upgrade Season Using the Quarterback Approach!

Presented by:

Glenda Anderson
Eric Enriquez

JPL

Jet Propulsion Laboratory
California Institute of Technology

OAUG Europe 2002

Opening

Upgrade Time

10 Days 12 Hours

Totally Unacceptable

Invented Methodology & Role

6 Days 2 Hours

Reduced by 40%

Quarterback
Approach

About:

- Methodology and Special Role created
  - To Plan & Execute an Oracle Upgrade

Not About:

- "How To" Steps
  - To Perform an actual Database/Application Upgrade

Quarterback Approach

Agenda

- Introductions
- Business Systems
- Challenges
- Solutions
  - Special Role
  - Methodology

Quarterback Approach

Introductions

Glenda Anderson
Testing Coordinator
Quarterback

Eric Enriquez
Configuration Management Coordinator
Quarterback

Quarterback
Approach

Jet Propulsion Laboratory

- **Federally Funded Research and Development Center**
  - Funded by National Aeronautics Space Administration
  - Operated by The California Institute of Technology

- **Located in Pasadena, California**

- **Robotic Space Exploration**

- **5,400 employees**
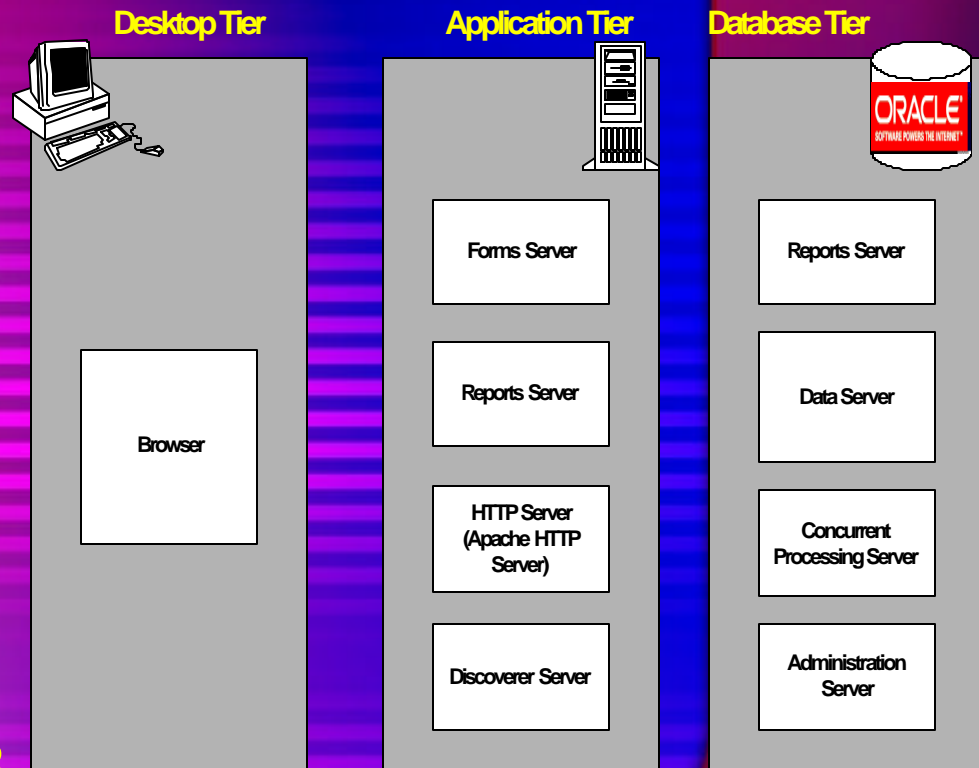
- **Annual Budget of $1.4 billion**
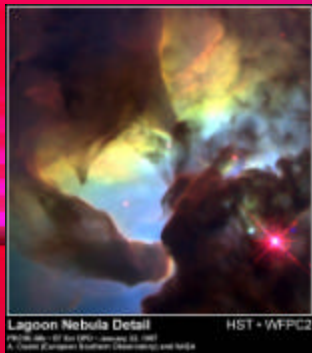
Business Systems

Hardware

- SUN E10K

- Solaris 2.61

- Classic 3-tier architecture

- Oracle DB 8.1.6.3
  - DB size ~ 500 GB

Internet Computing Architecture

Desktop Tier

Browser

Application Tier

Forms Server

Reports Server

HTTP Server (Apache HTTP Server)

Discoverer Server

Database Tier

ORACLE
SOFTWARE POWERS THE INTERNET

Reports Server

Data Server

Concurrent Processing Server

Administration Server

Business Systems

Applications

- 11.5.5 Version

- 13 Oracle Modules

- 38 Custom Applications

- 10 Third Party Applications

- 600+Re-Developed Custom Objects

Modules

- ✓ General Ledger
- ✓ Project Accounting
- ✓ Payables
- ✓ Cash Management
- ✓ Receivables
- ✓ Purchasing
- ✓ Order Management
- ✓ Inventory
- ✓ Assets
- ✓ Workflow
- ✓ Human Resources
- ✓ Payroll
- ✓ Oracle Advanced Benefits

The Team

Database Administrators

System Administrators

Management

Data Security

Sponsor

Developers

Functional Analysts

Configuration Management

Communication

Change Management

- 85 members

- 45% of Original Implementation Team

Large Advantage:

- Team members familiar with working together

Agenda

- **Introductions**
- **Business Systems**
- **CHALLENGES**
- **Solutions**
  - Special Role
  - Methodology

Challenges

Background:

- Planned Upgrades:
  - Five Practice Upgrades
  - Dress Rehearsal
  - Production Upgrade
- Activities After Each Upgrade
  - Upgrade Issues Resolution
  - Re-development Efforts
  - Testing

Challenges

- Extremely Detailed Project Plan made it difficult to manage daily

  - Over 270 + pages (Consultants assisted with original project plan)

  - While Project Manager works with overall project, someone was needed to coordinate daily operations of upgrade

Challenges

- Instability with Oracle Released Versions created Repeatability Issues

  - Used newer version for each upgrade
  - When issues encountered, Oracle would tell us they were resolved in next version...
  - Earlier version that may have fixed something are now broke in the later version.
  - Problems in getting consistent results between practice upgrade environments.
  - Almost like starting over for each practice upgrade.

Challenges

- **Upgrade Duration Too Long!**
  - Our customers could not be down for the amount of time the upgrades were taking.
  - Already knew we would need to staff final upgrade around-the-clock, 24 hrs, 7 days a week, until completed.
  - Because our payroll is bi-weekly, two weeks was the absolute maximum duration to upgrade.

Challenges

- Each team focusing ONLY on their area and making erroneous assumptions
  - Each team was fine tuning their steps for the upgrade.
  - No discussion between teams to see how the steps needed to be sequenced.
  - Expectations between teams that other teams would "do it the way they did the last practice upgrade". Not true.

Challenges

- **Ineffective Issues Tracking and Follow Through**
  - Initially we were not tracking carry-over issues between Practice Upgrade #1 and #2, etc.
  - We were not tracking common issues between Modules.
  - Although we had an Issues Tracking process; we needed to communicate the various issues between teams.

Solutions

- Two concepts evolved from the challenges we encountered moving from Practice Upgrade to Practice Upgrade

  - We created a Special Role for the Oracle Upgrades

  - We discovered a Methodology for performing Oracle Upgrades

Special Role

Role that would:

- Intimately Familiar with Project Plan & Upgrade Schedule
  - Prepare master calendar to show parallel tasks so teams would be able to plan other activities
  - Make sure that everyone is prepared for the next activity so we stay on schedule

Special Role

Role that would:

- Work with each Team to Analyze & Incorporate Lessons Learned

  - Each team worked on their detailed scripts to fine tune them, but we needed to bring them all together and incorporate them into one master schedule

  - Prepare the Master Upgrade Schedule of how to execute the upgrade.

Special Role

Role that would:

- Track Issues and Follow up on Resolutions
  - There are many types of issues that occur during an Upgrade. Issues could relate to:
    - Upgrade version
    - Environments
    - Oracle Upgrade script
    - JPL Upgrade Schedule
    - Modules
    - Business process with new features and some undocumented features.
    - Re-development of custom software

Special Role

Role that would:

- Track Issues and Follow up on Resolutions *(continued)*
  - Our developers were innovative in fixing bugs.
    - In many cases we sent the resolution to Oracle, and waited for Oracle to incorporate these fixes into patches.

It became important to have an individual coordinate all of the issues.

Special Role

Role that would:

- Bring Proactive Closure of Tasks with Handoffs
  - Although there was initial resistance of having one person as the focal point, once we showed our teams how we could cut down on the lag time, they concurred with the idea.
  - Advise each teams/individuals when to start a task. The team/individual report back when task is complete. Advise next team. We refer to these as handoffs.

Special Role

Role that would:

- Communicate to all Team Members
  - Many issues that arose needed to be communicated to all team members or the appropriate team members. This role took care of that. Often teams had been left out.
  - This ensured that everyone knew what was going on as changes occurred.

Quarterback Role

- Special Role Referred to as "Quarterback"
  - In American football this is the team member that "calls" the plays and orchestrates the execution of the plays
  - Our management is fond of American football, and we adopted the name
  - We will refer to it as the "QB" or "Quarterback"

Quarterback Role

The two primary Responsibilities of the Quarterback are:

- Planning

- Execution

Planning

- **Project Plan**
  - Translates to # of Practice Upgrades & Dress Rehearsal

- **Practice Upgrade #1**
  - Provides a Proof of Concept for the detailed steps of the Upgrade

Planning

- Lessons Learned on Practice Upgrade #1
  - Met with all Teams
  - Reviewed individual detailed schedules
  - Reviewed Categories Steps 1-6

11i Upgrade Categories 1-6

"Upgrading Oracle Applications 11i (11.5.3)" documentation
Dated January 2001, Part No A87334-01

Planning

- Lessons Learned on Practice Upgrade #1
  - Met with all Teams
  - Reviewed individual detailed schedules
  - Reviewed Categories Steps 1-6
  - Integrated individual schedules into a master schedule
  - Used this schedule for next Practice Upgrade

- Lessons Learned on Practice Upgrade #2
  - Met with all Teams
  - Reviewed individual detailed schedules
  - Reviewed Categories Steps 1-6
  - Integrated individual schedules into a master schedule
  - Used this schedule for next Practice Upgrade

Methodology

Orchestrated

Orchestrated

Orches

Planned
Collected
Integrated
Communicated

Planned
Collected
Integrated
Communicated

Planned
Collected
Integrated
Communicated

Practice
Upgrade #1

Practice
Upgrade #2

Practice
Upgrade #X

Planning

- Prepared Upgrade Schedule
  - Dress Rehearsal &
  - Production Upgrade

Planning

- Prepared Upgrade Schedule
  - Prepared Schedule in MS Projects

Upgrade Schedule Project Plan

	ℹ	Task Name	Duration	Start	Finish	Pred	Succ	Primary	Support	Iternal
49		Receivables	15 mins	Fri 12/14/01 1:30 AM	Fri 12/14/01 1:45 AM			Brian		teve S
50		Security	30 mins	Fri 12/14/01 1:30 AM	Fri 12/14/01 2:00 AM		52	Floyd, Pat W		ancy B
51		Services	120 mins	Fri 12/14/01 1:30 AM	Fri 12/14/01 3:30 AM			Dan, Anita G		
52	📝	Security Access: 10.7 TK Users & Emergency Transactions	300 mins	Fri 12/14/01 2:00 AM	Fri 12/14/01 7:00 AM	46,50		Pat W		Nancy B
53		⊟ CATEGORY 1	**115 mins**	Fri 12/14/01 3:30 AM	Fri 12/14/01 5:25 AM					
54		Database Upgrade Tasks	18 mins	Fri 12/14/01 3:30 AM	Fri 12/14/01 3:48 AM	32FS-90 mins	55	DBA 1		
55		Application Technology Products	5 mins	Fri 12/14/01 3:48 AM	Fri 12/14/01 3:53 AM	54		DBA 1		
56		⊟ **Financials Product Family**	**25 mins**	Fri 12/14/01 5:00 AM	Fri 12/14/01 5:25 AM					
57		Oracle Cash Management (Step 1)	25 mins	Fri 12/14/01 5:00 AM	Fri 12/14/01 5:25 AM	32	62	DBA1		
58		Oracle Payables Task (Step 1)	10 mins	Fri 12/14/01 5:00 AM	Fri 12/14/01 5:10 AM	32		DBA 2, Lynda		Bill
59		Oracle Projects Task (Step 3)	10 mins	Fri 12/14/01 5:00 AM	Fri 12/14/01 5:10 AM	32		Brian, Alicia		
60		Oracle Receivables Task (Step 3)	10 mins	Fri 12/14/01 5:00 AM	Fri 12/14/01 5:10 AM	32	62	Brian		teve S
61		⊟ **CATEGORY 2**	**210 mins**	Fri 12/14/01 5:25 AM	Fri 12/14/01 8:55 AM					
62		Database Upgrade Steps	27 mins	Fri 12/14/01 5:25 AM	Fri 12/14/01 5:52 AM	60,57	64	DBA 1		
63		⊟ **Application Technology Products**	**66 mins**	Fri 12/14/01 5:52 AM	Fri 12/14/01 6:58 AM					
64		Sys Admin (Steps 1 & 2)	6 mins	Fri 12/14/01 5:52 AM	Fri 12/14/01 5:58 AM	62	65	DBA 1		
65		Flexbuilder Acct Gen	60 mins	Fri 12/14/01 5:58 AM	Fri 12/14/01 6:58 AM	64	70,67	Scott, Janie, Brian, DBA 1	Shirlee, Steve S	Bill
66	📝	⊟ **Financials Product Family**	**117 mins**	Fri 12/14/01 6:58 AM	Fri 12/14/01 8:55 AM		FS-30 mins			
67	📝	Global Acct Engine	10 mins	Fri 12/14/01 6:58 AM	Fri 12/14/01 7:08 AM	65	68	Brian, DBA 2		
68		Project Task (Step 7a)	102 mins	Fri 12/14/01 7:08 AM	Fri 12/14/01 8:50 AM	67	69	Brian, DBA 2		
69		Project Task (Step 7b)	5 mins	Fri 12/14/01 8:50 AM	Fri 12/14/01 8:55 AM	68		Brian		Alicia
70		Purchasing Task (Step 1)	10 mins	Fri 12/14/01 6:58 AM	Fri 12/14/01 7:08 AM	65	71	Scott, DBA 1		Bill
71		HRMS Product Family	5 mins	Fri 12/14/01 7:08 AM	Fri 12/14/01 7:13 AM	70	72	Dennis, DBA 1		
72		Manufacturing and Dist Product Family	30 mins	Fri 12/14/01 7:13 AM	Fri 12/14/01 7:43 AM	71		Janie, DBA 1		Bill
73		⊟ **CATEGORY 3**	**198 mins**	Fri 12/14/01 8:25 AM	Fri 12/14/01 11:43 AM					
74	📝	Application Technology Products	170 mins	Fri 12/14/01 8:25 AM	Fri 12/14/01 11:15 AM	66FS-30 mins	76,80,77,79	DBA 1		
75		⊟ **Financials Product Family**	**28 mins**	Fri 12/14/01 11:15 AM	Fri 12/14/01 11:43 AM		FS-343 mins			

Planning

- Prepared Upgrade Schedule
  - Prepared Schedule in MS Projects
  - Identified all dependencies
  - Identified all resources
  - Identified all task durations
  - Identified parallel task
  - Evaluated long running upgrade jobs
  - Documented, documented, documented

Planning

- Review Upgrade Schedule with all Teams

- Fine Tune the Upgrade Schedule again

- Identify and Plan for cyclic business events

  - Such as: December upgrade scheduled right before payroll calendar year-end

Differentiate in the Upgrade Schedule between:
"Technical Upgrade" versus "Production Catch Up"

- Technical Upgrade brings the applications and database to the new version

- Production Catch Up – enter all transactions manually processed or accumulated during the Production downtime

- Quarterback Role During Execution
  - Manages the production upgrade schedule
  - Contacts all teams for on-site participation
  - Primary contact for Issue tracking & resolution

Execution

- QB is Staffed in 12 hours shifts for Continuity

- Updates the Upgrade Schedule dynamically
  - New start times for next activities based on actual times collect
  - Print Baseline Schedule and post outside Quarterback offices
    - 1.2M x 9.1M

Execution

- Distributes Updated Upgrade Schedule electronically every QB Shift

- Consults with Duty Manager on critical decisions
  - Member of the Senior Management Team
  - Final decision maker when deviating from original planned upgrade schedule or script

Execution

- ## Consults with Duty Manager on critical decisions *(continued)*
  - ### Formal Liaison to our customers
  - ### Liaison to Oracle Support
    - – Prior arrangements made with Oracle Support for the Dress Rehearsal & Production Upgrade
  - ### TAR Escalator
  - ### Assists Quarterback as needed

Execution

- Central Communication to all Team Members

- Prepares Voice Mail Status List
  - Voice mail status sent every 2 hours

- Prepares On Call & On Site Contact Lists
  - Pager #, Home #, Cell #

- Prepares Centralized Repository for QB documentation

Ground Rules

- Upgrade was 24 hours x 7 days

- Personnel performing tasks must be on-site 2 hours before estimated task start time

- Each team to have on site support and alternate during all shifts of the project regardless of the task

Ground Rules

- Each team member must sign in & out of building

- Each Team member responsible for knowing current status of project

- Primary Method to Contact Quarterback - Pager

Ground Rules

- Each Team member must respond to their pager/cell phone/home phone within 15 minutes

- Required pager confirmation

- Unable to reach contact, escalate up to their manager

Ground Rules

- Must have transportation flexibility during Upgrade (no carpooling)

- Comfortable casual dress (shoes, pants, shirt required)

- Know TAR Escalation process established

Accommodations

- Stocked our pantry and refrigerator with food/ beverages for teams on 24 x 7 shift

- Made arrangements for hotels for team members driving long distances

Accommodations

- Brought in cots for on-site teams for short naps

- Provided for transportation or babysitters if necessary during the night

Contingencies

- Unplanned Absence of Quarterback

- Establish Point of No Return

- Payroll Contingency Plan if schedule went longer than planned

Contingencies

- Power Outages

- Network Outages

- Server Outages – SUN Support

- Tool Outages

- Weather Outages
  - snow, rain, sleet, etc.

Summary

During our 11i Upgrade we obtained significant benefit from:

- Creating a Special Role – QB
  - Intimately familiar with Project Plan & Upgrade Schedule
  - Work with each Team to Analyze & Incorporate Lessons Learned
  - Track Issues and Follow up on Resolutions

Summary

During our 11i Upgrade we obtained significant benefit from:

- Creating a Special Role – QB
  - Bring Proactive Closure of Tasks with Handoffs
  - Communicate to all Team Members

During our 11i Upgrade we obtained significant benefit from:

- We discovered a Methodology for performing Oracle Upgrades where the QB:

  Planned

  Collected

  Integrated

  Communicated

  Orchestrated

Summary

- All lead to the Reduction of Production Downtime

The Scalable Model

On Site versus Off Site Support

Smaller product upgrade

Smaller teams

No place for a Dress Rehearsal

8 hr X 7 days versus 24 hr X 7 days

Quarterback Approach

Communication Modifications

- Oracle Upgrades are a Way of Life

- We found a way to reduce Production Downtime by 40%

- Using a tightly coordinated Upgrade Schedule with a Centralized Quarterback

- You Can Too!

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